NASA/GSFC	**NETWORKS AND MISSION SERVICES PROJECTS (N&MSP)** **CONFIGURATION CHANGE REQUEST (CCR)**

1. CCR. NO. CCR-451-ICD-15	2. DATE May 26, 1999	3. PRIORITY	☐ EMERGENCY ☐ URGENT ☒ ROUTINE	4. CHANGE LEVEL ☐ A ☒ B ☐ C

5. TITLE OF CHANGE:
Replacement of "STDN 108" References with "451-PN Code-SNIP" References

6. DOCUMENT TITLE: Interface Control Document (ICD) between the NCC/FDF and the WSC, Revision 5, through DCN 02, 5/15/99

DOCUMENT NO.: 530-ICD-NCC-FDF/WSC, Rev. 5 through DCN 02

LIST ALL AFFECTED DOCUMENTS INCLUDING PROCEDURES:
STGT HE-06-3
STGT-OP-03
STGT-SE-05
530-WSC-0022

7. REASON FOR CHANGE:
To replace all references of "STDN 108" with its superseding document, "451-PN Code-SNIP". Additionally, to incorporate Phase III of "Virtual Spacecraft and Space Network Interoperable PN" Implementation Description Rev. 4 document.

8. DESCRIPTION OF CHANGE: Pages 1-2, 2-14, 9-4, 9-4a, 9-5

9. IMPACT   SYSTEM

Y N	Y N	Y N
☐ ☒ SCHEDULE	☐ ☒ BUDGET	☐ ☒ FACILITIES
☐ ☒ TESTING	☐ ☒ TRAINING	☐ ☒ CONTRACTOR SUPPORT
☒ ☐ INTERFACES	☐ ☒ SECURITY	☐ ☒ HARDWARE
☒ ☐ SOFTWARE	☐ ☒ LOGISTICS	☒ ☐ DOCUMENTATION
☒ ☐ GROUND SEGMENT		☐ ☒ SPACE SEGMENT
☐ ☒ OTHER _____		

ORGANIZATIONAL

Y N		Y N		Y N	
☐ ☒	450	☐ ☒	_____	☐ ☒	MSFC
☒ ☐	451	☐ ☒	_____	☐ ☒	JSC
☐ ☒	452	☐ ☒	_____	☐ ☒	LERC
☐ ☒	453	☒ ☐	**Code** 405	☐ ☒	KSC
				☐ ☒	JPL

10. **COMMENTS:**

This CCR is available for review at http//: stelwscpo.gsfc.nasa.gov

11. ORIGINATOR D.Gilliland 301-805-3781 <u>CODE 451</u> SIGNATURE _____ DATE _____	12. SEGMENT MANAGERS APPROVAL CODE_____ SIGNATURE _____ DATE_____
13. BOARD CHAIRPERSON SIGNATURE DATE _____	14. BOARD CHAIRPERSON COMMENTS

15. BOARD ACTION ☐ Approved ☐ Withdrawn ☐ Disapproved ☐ Deferred _____	16. ACTION REQUIRED ☐ Publish Document ☐ Publish DCN ☐ Deviation ☐ Waiver ☐ Implement Change ☐ Other _____

d. Network Control Center Data Systems (NCCDS) System Requirements, 1998, 530-SRD-NCCDSS/1998.

1.4.2 Standards

a. NASCOM Interface Standard for Digital Data Transmission (NISDDT), 542-003.

b. IRIG Standard Parallel Binary Time Code Format, X-814-77-64.

1.4.3 Other Documents

a. Digital Data Source/Destination and Format Codes Handbook for the Nascom Message Switching System, 542-002.

b. Tracking and Acquisition Handbook for the Spaceflight Tracking and Data Network, STDN No. 724.

c. Space Network Users' Guide, 530-SNUG.

d. Support Identification Code Dictionary, 534-808.

e. ~~PN Codes for use with the Tracking and Data Relay Satellite System (TDRSS), STDN No. 108~~Space Network Interoperable PN Code Libraries, 451-PN Code-SNIP.

f. Mathematical Theory of the Goddard Trajectory Determination System, Revision 1, GSFC FDD/552-89/001.

Service	Danzante PN Codes (NASA Library)	Cacique/GRGT PN Codes (NASA Library)
Multiple Access (MA)/S-Band MA (SMA) *	39	26
S-Band Single Access (SSA)	40	27
K-Band Single Access (KSA)	41	28
K-Band Shuttle (KSH)	42	29
S-Band Shuttle (SSH)**	3	2

*Each TDRS will provide either MA or SMA services but not both, thus only one PN code is required. (See ~~STDN 108~~ 451-PN Code-SNIP for more details on PN code)
**From the 451-PN Code-SNIP NASA Shuttle Specific Library~~.~~

19. Two SGLTs supporting collocated TDRS spacecraft shall support up to the same number and type of EET services as a single SGLT supporting a non-collocated TDRS spacecraft.

2.2.4 Operations Message (OPM) Ground Rules

The following ground rules apply to operation messages:

1. A message (single or multiblock) shall not contain more than one OPM.

2. OPM's sent by the NCC to WSC which require processing shall be contained in one 4800-bit block message. OPM's which do not require processing (text messages) may contain 1 to 15 4800-bit blocks.

3. The reference to a SHO from a service-related OPM is by SHO ID, TDRS ID, and link ID (service support type and subtype).

4. An OPM received at the WSC which references a specific service is valid only for an ongoing service. An OPM which applies to all services in the referenced SHO (i.e., cancel SHO OPM) is valid at any time prior to the termination of the last service in the referenced SHO.

5. NASA has assigned the following numbers:

	SIC	VIC
Danzante	1540	01
Cacique	1373	01
GRGT	1375	01

6. A reacquisition OPM will be rejected if there is an inoperative status indication for any equipment in the string being used for that service and an OPM reject message will be sent to the NCC.

7. All outbound OPM's will be sent to the NCC without TOCC intervention.

8. MA OPMs apply to TDRS A-G only. KaSA and SMA OPMs apply to TDRS H-J only. Incorrectly received OPMs for TDRS capabilities shall be rejected.

9. Return Channel Time Delay (OPM-52) will not be provided for any scheduled GRGT support irrespective of the setting of the RCTD SHO parameter.

15 May 1999   2-14   530-ICD-NCC-FDF/WSC
CCR-451-ICD-15/May 26 1999   Revision 5
DCN-02

9.2.1 SHO Header

The structure of the SHO header is:

Byte #	# of Bytes	Data Item
23-24	2	Message Type
		1 = Tracking Data
		=> 2 = SHO - Routine
		3 = OPM (Operations)
		4 = SLR (TDRSS Service Level Status)
		5 = ODM (SA/SMAR Operations Data)
		6 = ODM (MA/SMAF Operations Data)
		7 = ODM (End-to-End Test Data)
		=> 8 = SHO - Periodic
25-31	7	SHO ID
		SHO's shall be sequentially numbered:
		1 to 9,999,999 to 1
32-33	2	SHO Class
		1 = Normal
		2 = Spare
		3 = End-to-End Test
		4 = Spare
		5 = Spare
		6 = High Data Rate Multiplexer (HDRM) from IFL
		(see subheader No. 6)
34-40	7	SUPIDEN - Code assigned by NASA - normal/Shuttle/Virtual user
41-42	2	Vehicle Identification Code (VIC) - Code assigned
		by NASA - normal/Shuttle/Virtual user
43-49	7	~~SUPIDEN - Code assigned by NASA - normal/Shuttle/Virtual user~~Spare
50~~-51~~	~~2~~1	~~Vehicle Identification Code (VIC) - Code assigned~~
		~~by NASA - normal/Shuttle/Virtual user~~
		User Code Library –S-Band*
		This subfield identifies the code library from which the S-Band
		user code assignment is made (451-PN Code-SNIP).
		1 = NASA*
		2 = ESA
		3 = NASDA
		4 = Unassigned

*For S-Shuttle services, the NASA S-Shuttle specific library applies (451-PN Code-SNIP)

51	1	User Code Library-K-Band
		This subfield identifies the code library from which the K-Band user code assignment is made (451-PN Code-SNIP)
		1 = NASA
		2 = ESA
		3 = NASDA
		4 = Unassigned
52-53	2	User Code Assignment - S-Band
		This subfield contains the S-Band code assigned ~~(STDN 108)~~ (451-PN Code-SNIP)*
54-55	2	User Code Assignment - K-Band
		This subfield contains the K-Band code assigned ~~(STDN 108)~~ (451-PN Code-SNIP)*
56	1	~~Copy of Byte 53~~Spare
57	1	SHO Source
		0 = NCC
		1 = WSC

* For Shuttle the least significant byte of the S-Band User Code Assignment applies. ~~For Normal users, the S-Band User code and the K-band User code will have the same value.~~

Byte #	# of Bytes	Data Item
58-59	2	Number of Services Requested in this SHO
		This subfield indicates the number of services requested in this SHO. (1-16)
60-62	3	NASCOM/User Channel ID
		This subfield is for NASA use to identify a channel assignment at the NCC end of the NASA Communications Network (NASCOM) link. WSC does not use these data.
	40	

SHO Header Notes

Use the S-Band PN code for all S-Band services. Use the K̶/̶K̶a̶-Band PN code for all K̶/̶K̶a̶-Band services. Use SHO Subheader No. 3 to distinguish a Shuttle service from a normal user service. For normal users, the S-Band User code and the K-band User code will have the same value.

S-Band and K̶/̶K̶a̶-Band codes may be the same for a given user. D̶u̶a̶l̶ Virtual users (i.e., two users in the same SHO with S-Band services to one user and K̶/̶K̶a̶-Band services to the other) shall be designated by a single unique SUPIDEN/VIC identified in SHO Header bytes 34-42. User vectors shall be provided for the SIC/VIC corresponding to this unique SUPIDEN/VIC. S and K̶/̶K̶a̶-Band d̶u̶a̶l̶ virtual user services may be reconfigured in the same way as a single user. D̶u̶a̶l̶ Virtual user services apply to SSA and KSA/KaSA only.

9.2.2 SHO Subheaders

9.2.2.1 SHO Subheader No. 1: Service Type, Subtype, and TDRS ID

# of Bytes	Data Item
1	Service Support Type
	0 = Forward
	1 = Return
	2 = Tracking
	3 = Forward End-to-End Test
	4 = Return End-to-End Test